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ABSTRACT

Major trends and factors are discussed which are likely to influence the development of education in socialist countries over the next 20 years. There are three major sections to the paper: basic features of educational development; trends in educational development; and some aspects of educational forecasting and prospective planning. The educational system in socialist countries is designed to shape socialist personalities who employ their talents and capabilities for the benefit of the socialist society and who are distinguished by their willingness to work and by their collective spirit. Special characteristics of education in socialist countries include mass education, more training for the world of work, and more links between higher education and research. Trends in these countries include setting up evening and correspondence courses, the development of people's universities, curriculum revision, utilization of an interdisciplinary approach, and making available alternative or elective subjects. Educational forecasting and planning are very important in socialist countries because of the prime role they play in the optimal perspective plan for economic development. The widespread use and practical testing of various new methods in mathematics, systems analysis, and computer software have made it possible to formulate the general aims and concrete tasks confronting present day educational planning.
(Author/RM)

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Reflection on the Future Development of Education

EDUCATIONAL DEVELOPMENT AND FORECASTING IN SOCIALIST SOCIETIES

prepared by

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for the

Division of Educational Policy and Planning
Unesco, Paris, 1980

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Introduction

At its 20th session in 1978, Unesco's General Conference approved a programme having as one of its objectives the promotion of educational planning and policy-making in its Member States. One of the activities included in the work plan is entitled "Reflection on the future development of education", designed to stimulate future-oriented thinking on education with a view to developing the capacity to take into account the probable impact of various factors on the evolution of education when elaborating educational policies and plans in a long-term perspective. This same activity is intended to help define future priorities for international cooperation in education and particularly the contribution Unesco can make to the Third United Nations Development Decade (1981-1990), within the context of the establishment of the new international economic order. A report on the activity will be presented to the Member States of Unesco at the 38th session of the International Conference on Education in 1981.

The actual process of reflection involves eminent educators, scientists and cultural specialists, as well as educational practitioners. A series of regional symposia have been organized in 1980 to consider the prospects for the development of education in each of the major regions of the world: Asia and Oceania, 2-4 September; Africa, 9-11 September; Arab States, 7-9 October; Latin America and the Caribbean, 15-17 October; and Europe, 3-5 November. The international panel convened at Unesco Headquarters from 17 to 21 November, 1980, considered the world-wide implications of the findings of the regional symposia with a view to identify the major trends and factors which are likely to influence the development of education over the next twenty years. The panel was invited to explore in an objective manner the possible paths of that development, distinguishing among them, if possible, those which appear to be most probable and to advise the Unesco Secretariat regarding which factors or issues require more careful study and elaboration in the report to the Member States. It is intended to convene a second meeting of the international panel to discuss and comment the draft report in the course of the second semester of 1981.

The Secretariat intends to publish some materials of the regional symposia and international panel meetings in the forthcoming issues of the "Reports & Studies" series. This issue is devoted to educational development and forecasting in the socialist countries and is written by two young specialists interested in the problems of forecasting. This is the sixth study concerned with the development of education to be published in this series. Papers S.70 and S.87 present a selective and annotated bibliography; Paper S.74 gives directions of educational development in the developing countries, prepared by S. Lingappa; Paper S.79 concerns prospects of educational development in the O.E.C.D. countries, prepared by W. van Vliet. I also strongly recommend the study of Mr. J.P. Naik, Paper C.86 : "An assessment of educational reform in India and lessons for the future". These papers may be obtained on request fom this Division (Unesco-EPP, Place de Fontenoy, 75700 Paris, France).

I would recommend also a collection of papers published under the title The future of education and the education of the future by Unesco's International Institute for Educational Planning (7, rue Eugène-Delacroix, 75016 Paris, France).

Your comments and suggestions on the above series of studies devoted to the future development of education would be most welcome.

Boris K. Kluchnikov
Director,
Division of Educational
Policy and Planning

I BASIC FEATURES OF EDUCATIONAL DEVELOPMENT

The rapid socio-economic development in the socialist European countries during the last three decades brought about far-reaching changes in their political, social and economic structures. Full employment, the elimination of income disparity, the rapid rise of the educational level of the population - common features in the countries under consideration. The role that education plays in the implementation of these principles in a socialist society deserves analysis.

The major educational changes in the socialist countries have developed primarily on the basis of the public ownership of production facilities and centralised planning of the economy. In this connection, the systems of education in these countries have similar characteristics with regard to their fundamental organisation and in their educational and training aims and methods. There is no dobut that, after careful study of local conditions, other countries could benefit from these experiences.

It should be noted that it is not intended here to demonstrate the degree of each country's educational development in a static manner, but rather to review the main features and principal trends of the development in these countries. In particular, and within the limits the paper has set itself, the following aspects are examined:

- the basic features and trends of educational development of the countries - democratisation of education, vocational training of youth, and development of research in higher education;
- content and structure of educational forecasting and long-term planning in the socialist countries.

In the conclusion, some new tendencies in the development of the forms and content of education are briefly examined.

In compiling this work, official sources of information have been used and most of the information was collected from relevant publications of the national central statistical offices, and recent monographs devoted to different aspects of educational development. Those interested in learning more about the existing situation and current trends in educational development in the countries studied, may consult the documents and other publications listed in the bibliography.

1 General principles

The basic target of socialist society is the welfare of man, the good, versatile and harmonious development of his personality. From this point of view, the education and instruction of the young generation is the concern of the whole society. The educational system is closely connected with the dynamic development of the society and evolves changes in contents and structure particularly according to the prospective requirement of the socialist society.

The educational system is designed to shape socialist personalities who employ their talents and capabilities for the benefit of socialist society and who are distinguished by their willingness to work, by their preparedness to take part in national defence, by their collective spirit, and by their striving for high communist ideals. It is the objective of all educational institutions to educate universally and harmoniously developed personalities who consciously shape their social life, change nature and lead a full, happy, and dignified life.

Democracy and the highly humane feature of the educational systems of socialist countries are expressed by fundamental principles which determine the development of this system. For example, the Soviet public education system is built on the following principles:

- an equal right for all Soviet citizens to receive education, regardless of race, nationality, sex, religion, property and social status;
- compulsory education for all children and teenagers;
- the state and social nature of all educational institutions;
- free choice of the language of instruction; education in the native language or the language of any other people of the USSR;
- the free provision of all forms of education and medical care, some categories of students receiving full state maintenance; scholarship grants and other material assistance;
- the uniformity of the public education system and continuity of all types of educational establishments, ensuring progress from the lower stages learning to the higher;
- the unity of instruction and communist education; the cooperation of the school, family and public in the upbringing of children and youth;
- education of the rising generation is connected with life, with the practice of communist construction;
- education is scientific, and constantly improved on the basis of the latest achievements of science, technology and culture;
- the humane nature and high moral sta dards of education and upbringing; high standard of morality;
- co-education;
- education is secular and is devoid of religious influences[1].

The Czechoslovak system of education and instruction is characterized particularly by the facts that:

- all citizens, regardless of nationality, race, sex, religion, financial and social circumstances have the same right for education, and all schools of the Czechoslovak system of education and instruction are open for them;

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1) Public Education in the USSR in 1977-1978 and its development, p.72

- the study in all grades and branches of schools is free of charge (pupils of basic and secondary schools get their text-books and school equipment every year free of charge);
- the encouragement of the interest and effort of the young people and citizens to gain the highest possible education is a significant component of school politics of the state, and the production and social organizations;
- each people and nationality has the right to be educated in schools of their mother tongues;
- all schools are state-owned;
- the education of working people in schools is part of the educational system;
- the school system thus represents a uniform educational system of institutions of education which is next to others manifested by the uniformity of education gained at any grade of school all over the country with a possibility to continue education at a higher grade of school;
- the contents of education and instruction are based on scientific ideas and the newest knowledge of science and technique;
- the targets of education are highly humane and democratic, education to nationalism, racism, apartheid and war prohibited and subject to persecution;
- compulsory school attendance is being extended to 10 years during which secondary, general and polytechnical education is being provided;
- the system of secondary education is being unified thus creating conditions for the gradual provision of 12-year secondary education for all young people [2].

Similar guiding principles are the basis of educational systems in other socialist countries. Thanks to the constant concern on the part of the society about the development of public education and its material base the number of educational establishment of all kinds and the rate of scholarisation are growing steadily. In the Soviet Union, for example, more than a third of the people are enrolled in general education, vocational or technical schools, institutions of higher learning or other educational establishments. There were in this country over 97 million students of all kinds in the 1979-1980 school year.

The rate of scholarisation in the socialist countries is determined on one hand by social and individual aspirations, and on the other, by material conditions of society, the balance of labour force and the demand for particular kinds of labour.

The balance of labour force influences the rate and directions of scholarisation at post-primary level in a twofold way.

Firstly, the demand for highly skilled technicians and skilled workers leads to assessment of needs for vocational education. These needs are determined by particular regions of the country and by branches and economic sectors. After being agreed upon by the Planning Commission (taking into consideration demographic projections), they become the basis for decisions made jointly by the leading authorities of particular sectors of economy and the educational authorities. These decisions concern directions and levels of vocational education.

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2) Main trends of education and instruction in the Czechoslovak Socialist Republic during the years 1976-1978, p. 8-9.

Secondly, the demand for low-skilled labour provides a barrier to scholarisation at post-primary level even in an abstract situation, in which there are no other (material or non-material) limitations. Therefore a decision concerning the rate and directions of scholarisation at post-primary level is a basic political decision, formed as a result of the confrontation of social aspirations with practical possibilities of their realisation and also with the overall needs which have to be met. Practically this decision is the outcome of balances of demand for skilled labour. In Poland (as in other socialist countries) such balances are prepared at the level of individual enterprises, branches and sectors of the economy. Later they are corrected by the Planning Commission in the light of existing demographic projections and finally agreed upon with local and central organs of educational policy.

As individual decisions concerning the continuing of education at post-primary level are free, the instruments for implementation of decisions concerning the rate and directions of scholarisation are limited to the system of salaries and other benefits connected with the undertaking of a job. Also a more or less rigorous system of assessing qualifications is required for further studies, which may be based on entrance examinations.

2 Special characteristics

2.1 Democratisation

In a socialist society, there exists an objective unity of interest between society and the individual. The aims of society and continuing progress in science and technology are to achieve the fullest possible harmonious development between the two.

The social processes that take place in a developed socialist society are distinguished by the elimination of the essential differences between physical and intellectual work, and further by the development of the social homogeneity of society.

Thus, in recent years, the number of people with a higher or secondary education in the countries studied, has been growing much more rapidly among the workers and collective farmers than among the people engaged in intellectual labour. This is the result of promoting post-secondary education for workers. It should be recalled that in most countries, the ratio of students with agricultural and manual labour backgrounds range between 40 and 60 percent - a proportion almost corresponding to the social composition of the countries.

In spite of the impressive achievements in the field of the democratisation of education, it cannot be stated without reservations that equal conditions in education have been created for young people of different social backgrounds in the East European socialist countries.

The extent to which the parents are educated, their cultural standards, occupations, financial positions and location of their homes, are responsible even today for remarkable differences in young people's spiritual development, standards of learning and ambition to obtain higher education. That is why assistance to gifted young people with disadvantageous social backgrounds continues to play an important part in the educational policy of socialist countries.

Though the actual measures taken are not exactly the same in all the countries under examination, the general principles of democratisation are

quite uniform in all of them. The object of this policy is not merely to ensure that the proportion of young people from working class and peasant families corresponds to their numerical ratio in the total population, solely by taking administrative measures to this effect. The fundamental aim is to make it possible for gifted and suitable people, regardless of their social background to obtain higher education. The purpose of the various ability and aptitude tests is to select those really capable of studying at higher educational institutions, whose abilities and aptitudes would enable them to be successful in college or university.

The people chosen on the above basis are helped by boarding schools and preparatory courses to do what they would otherwise be unable to do owing to their disadvantageous backgrounds, cultural environments, intellectual start and actual knowledge. The different sorts of assistance are not designed to offer a kind of privilege, but to counterbalance and eliminate objective disadvantages (3,4).

The process of democratisation of the social composition of the student body has gone hand in hand with the process of democratization in the administration of higher education establishments of the countries under study. To illustrate these changes better, it is interesting to take a quick look at the conditions prevailing in the 1950's.

In the 1950's, intensive centralisation was a paramount feature of the administration of the higher education institutions operating in these countries. The state supervisory bodies (ministries) often had authority extending to minute details of a problem. The leading administrators of universities and colleges were appointed by the respective government departments and, on the principle of what was described as "one man's responsible leadership", those people had substantial authority concentrated in their hands. The different leading universities, colleges and councils operated as advisory bodies with right to be consulted and to submit proposals.

This system has undergone many different and far-reaching changes in all the countries concerned, over the past decade. The changes can be summarised as follows:

a) parallel with the development of the independence of the institutions of higher education, the form "one man's responsible leadership" came to be combined with administration by a body, and these bodies of educational administration were given the right of decision-making in several matters;

b) their composition has been modified so that they now include elected representatives of all levels of staff. As a result, they have emerged as representative organs as well;

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3) "Development of education in the USSR", Mik. Prokofiev, USSR Minister of Education, Journal of Science and Public Policy, June 1976

4) "Case study on the development of higher education in some East European countries", Unesco, J. Agostan, Oct. 1979

c) in addition to the members of the teaching staff, representatives of the educational services, workers and students have also been included in these bodies;

d) a novel sort of relationship has been established between the universities and colleges and the economic, social and scientific institutes for which the higher educational institutions train specialists. The ties between the two categories can take the form of co-operation, but they might well lead to integration on a wider scale. It is also a general endeavour to directly include the social, economic and scientific institutions concerned in the administration of universities and colleges, by their being represented on the staff of the administrative bodies.

Another expression of the growing democratisation of educational systems in socialist countries is the large participation of parents in the direction of schools. Parents contribute to the schools in many ways. Parental advisory councils in every school and parents' committees in every class consisting of the elected representatives of the parents are legally equipped to take part in school matters. In the German Democratic Republic, for example, in 1978 there were more than 100,000 parental bodies in ten-year schools. This committee holds regular meetings with the class teacher, discusses problems concerning the children's education, helps to prepare parents' meetings and, when appropriate, it organizes (together with the class teacher) parents' consultations and visits.

In 1978, in the German Democratic Republic, more than 680,000 mothers and fathers were elected into parental bodies in ten-year schools; 44 per cent of the parental representatives are women. On an average, in one of every four families with school-age children either the mother or the father is involved in an elected parental body. It has been regulated by law that members of the parents' committee have to get leave from their work to deal with important tasks within the framework of their elected functions. Parents support educational work, teaching and learning. They exchange experiences with each other and thus they influence family education 5).

2.2 Links between education and work

One of the main aspects of educational development in the countries concerned which has received particular attention, is the link between education and life and the strengthening of polytechnical education and training for the world of work.

The establishment of these links between education and life promotes social, scientific, technological and cultural development and ensures that this process is conducted on a more scientific basis. Therefore, greater emphasis is being made on the experience gained from practical work in the school. The purpose of labour education is to teach productive skills, inculcate a love of work and respect for working people and help pupils to make a wise choice of career.

Alongside with perfection of the content of school education a new impetus was given to the development of the 'politechnic' principle of education. The design of the new curriculum and syllabuses of each school subject draws on more exactly pointed out relationships between theoretical principles under study and national economy, the examples of industrial translation of fundamental knowledge are always given.

5) Development of Public Education in the German Democratic Republic

Consequently, school has become more efficient as regards the mandate from society: to prepare the young people for life outside school, for labour to meet social needs. In the USSR the main directions of this work were indicated in The Decree of the Central Committee of the Communist Party of the Soviet Union and The Council of Ministers "On Further Development of Instruction and Upbringing of Secondary School Pupils and Their Preparation for Labour", 1977. This document started a wide range of measures undertaken by local education authorities. It put forward the ideal of schools that will be built during the stage of advanced socialism with an aim to provide allround education for would-be architects of Communist society.

The above-mentioned Decree set up the ample programme of labour education for school students. It includes the following points:

(1) Performance of labour education shall be radically improved on the basis of revised syllabus for labour education in all secondary school forms and due to allotment of more set periods to this subject.

(2) Classes shall be organised at the specialised labour-education centers and in the shops at the enterprises providing the school with industrial base.

(3) Material and technical basis of schools shall be improved to facilitate labour education at schools.

(4) Training of teachers to conduct labour education lessons shall be expanded and improved.

(5) Participation of school students in public works and productive activities of Society shall be expanded.

(6) Preparation of young people for work in national economy shall be made more efficient on the basis of improvement of labour education, economy-oriented training, and carefully scheduled carreer guidance to help school-leavers to choose a trade to take up.

Thus, in the USSR it is noted that for the last few years, pupil production brigades have become widespread, and at the present time, 40,000 production brigades and school forestry groups include approximately 3 million pupils. Their main task is to create favourable conditions not only for productive labour, but also for the comprehensive development of a school child's personality, to develop an interest in agriculture and forestry occupations, and to learn to use equipment. Approximately 6 million school children are working in technology, and young naturalists clubs. Work and recreation camps also enjoy great popularity.

In the other socialist countries, polytechnical education, involving knowledge of the world of work is also built into the general education school curriculum from the earliest grades; it includes study of the relationship of the pysical sciences to their practical application in industry and also some elementary practical training in specific fields.

In the German Democratic Republic, for example, where the ten-year general polytechnical secondary school is an integrated uniform school type for all children, this ten-year shcool is essentially marked by its polytechnical character. Polytechnical education is a vital indispensable component of general education and is effected both as a polytechnical principle in the subjects of mathematics, natural and social sciences as

as in specific polytechnical disciplines. As a result of the total general education, a broad basis of knowledge, abilities, moral behavioural qualities and ideological convictions is built up, on which the subsequent vocational training is founded. Polytechnical instruction and pupils' productive work are essential parts of general education and, in their uniformity and variety, they prepare for and orient towards working life and professions.

Polytechnical instruction and productive work in socialist industrial and agricultural plants as all other forms of work education are aimed at qualities such as respect for work and the achievements of working people, a socialist attitude and approach to work, work discipline, order, precision and tidiness in work, at the formation of creative powers and in the versatility of the young people in mastering the scientific and technological progress under conditions of a socialist society. The factories, cooperatives and other plants guarantee pupils from the 7th to the 10th grade the opportunity to do productive work, through the establishment of polytechnical centres and workshops and through making training vacancies available in the factories. Pupils' productive work is ensured in more than 5,000 industrial, constructional and agricultural plants and enterprises and guided by about 8,000 full-time and 22,000 part-time instructors (skilled workers, foremen and engineers)6).

In the Czechoslovak Socialist Republic a new system of education and instruction, which will gradually materialize up to the year 1990, is drafted also in this way. The educational system of this country will:

- provide secondary general, polytechnical and professional education for all young people up to the age of 16 (thus introducing 10-year compulsory education for all young people);

- provide gradually by the creation of material and technical and cadre conditions, for all young people compulsory complete secondary 12-year education;

- the ten-year compulsory secondary general, polytechnical and professional education will be provided at the basic school and (which takes eight years) at the first and the second class of secondary schools.

Secondary school is the principle, but not the only, general educational establishment. A network of 'evening' schools providing compulsory part-time education for the young people who combine work in industry with schooling. Among other secondary schools more and more important become secondary vocational-and-technical schools. In the USSR there are, in 1980, 3,984 schools of this type taking two million pupils. Secondary vocational-and-technical schools represent a radically new type of educational establishment that was brought to life by the requirements of modern production and the necessity to prepare a worker who would combine academic qualifications with those of a craftsman. After these schools the diplomas are gained by the students which mark their completion of secondary education and the end of vocational training. The diploma is a sufficient entrance qualification for any higher educational establishment (University, politechnic, agricultural or teacher-training higher college, etc.) Schools of this kind have become an important vehicle for enabling the young people to get secondary education.

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6) Development of Public education in the German Democratic Republic Berlin, 1979, p.14

In the German Democratic Republic apprentices are trained as skilled workers in a total of 291 skilled trades with more than 600 fields of specialization. Apprentices have also the opportunity of a solid vocational training as skilled workers in the enterprise vocational schools equipped with modern training facilities (these account for 75 per cent of all vocational training establishments and two thirds of all apprentices), the local vocational schools, the more than 600 training workshops in factories, the large number of training places in production, agricultural production cooperatives and craftsmen's cooperatives. The training is guided by the teachers of theoretical and practical vocational training (including in-factory teaching experts who are specially qualified).

At the present time, more than two thirds of all working people in the German Democratic Republic have completed vocational training. 56 per cent of all working people are skilled workers or master craftsmen. Approximately every fourth working person has concluded some form of advanced training (7).

In the Czechoslovak Socialist Republic the young pupil is trained for worker's professions in the apprentice training centres and apprentice schools. In 1978 there were 906 such schools with about 337 thousand apprentices (8). In the Polish People's Republic there were in 1978 1,431 professional group-schools (9) and in the Romanian Socialist Republic in 1979 there were 555 professional schools with about 138 thousand apprentices (10).

It should be noted that graduates from secondary vocational schools and secondary specialised schools in socialist countries can be admitted to institutions of higher education, and those with professional qualifications of a specific nature are given priority.

2.3 Role of technical education

It is necessary to note that special attention is being paid to the training of technicians, ie. specialists with secondary specialised education in the countries studied.

The main functions of technicians in the socialist countries (as well as in all other countries) are as follows:

a) to act as principle organisers and technical leaders in the primary stages of production;

b) to provide immediate servicing of automated and other main machinery;

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(7) Development of Public education in the German Democratic Republic, Berlin, 1979, p.25

(8) Main trends of education and instruction in the Czechoslovak Socialist Republic during the years 1976-1978, p.64

(9) Le développement de l'instruction publique et de l'éducation en Pologne Populaire en cours des années 1977-1978. Varsovic, 1979, p.68

(10) L'enseignement en Republique Socialiste de Roumanie, 1979, p.16

c) to be assistant engineers.

In this connection, it should be noted that in spite of the considerable growth in the number of technician graduates, the increase in preparing specialists with secondary specialised education is still insufficient compared with that of specialists with higher education. Therefore, it is proposed to accelerate the development of secondary specialised education so as to reach optimal correlation under existing conditions: five or six specialists with secondary specialised education in industry, construction, transport, communications and agriculture, for every specialist with higher education.

Unfortunately, at present, in many cases, labour of engineers is used for the carrying out of functions which could be implemented more successfully by technicians or by other categories of working people. The increase in the number of pupils will be effected by expanding the scope of existing technicians, setting up branches and departments in industrial enterprises, on building sites, large state farms, scientific research institutes and other organisations as well as by creating new secondary specialised establishments, especially in areas where there is intensive development of industry and agriculture.

Now in the USSR there are more than 4,300 establishments of secondary specialised education and about 4.5 million technicians. In the German Democratic Republic there are 233 technical schools, indluding 53 schools of engineering. 111 out of every 1000 people employed in this country have graduated from a technical college. Similar systems exist in other socialist countries in which they play a very important role in the training of technicians. Graduates from special secondary establishments make a valuable contribution to the development of the national economy of the countries of East Europe. At the present time they are the most numerous category of specialists working at plants, factories, construction sites, collective farms, in the field of enlightenment and public health, and in the realm of cultural and living facilities.

2.4 Links between higher education and research

To illustrate the dimensions of fundamental changes which have taken place in higher education of the European socialist countries, it is interesting to take a quick look at the pre-war conditions of higher education in these states.

Higher education in Central and Eastern Europe is based on centuries-old tradition. The development of the educational system in this part of Europe, however, was affected by the historical fact that the countries concerned were under foreign influence for a considerable period of time, and gained independence only in the 19th and 20th centuries.

The overwhelming majority of the countries studied were under-developed capitalist states. Because of the social backwardness and the conservative regimes prevailing in the majority of these states, higher education (which was comparatively underdeveloped) was not based on general education of an adequately wide enough range, and this factor determined and limited the social composition of the students.

In fact, the selection of students on a social basis in secondary schools was a prerequisite for admission to any higher educational institution. Undergraduates with working class or peasant backgrounds accounted for less than 10% of the total university and college population 11).

11) Case Study on the development of higher education in some East European countries, by G Agoston, ED-74/WS/52, Unesco, Paris, 1974

It should be noted that even those unfavourable conditions could not diminish the merits of outstanding scientists, scholars and professors who managed to achieve remarkable scientific results and train excellent students, some of whom have gained world-wide reputations by now.

During the socialist development the higher education systems of socialist countries has made significant progress. In the USSR there are now 4 million, 700 thousand engineers, 3 million, 800 thousand doctors and teachers, 600 thousand agricultural graduates, 1 million, 300 thousand scientists. That is a result of a higher education system which has 883 establishments with 5 million, 200 thousand students. Other socialist countries have also recreated their higher education systems.

The system of training at colleges and universities in the countries under examination is adjusted to the requirements arising from the planned development of the national economy. The main task for higher educational institutions is to produce scientifically trained, socialist specialists who are aware of their social responsibilities and committments, in addition to practising their respective professions.

One of the main features of the development of higher education is the integration process of higher education with economic and social life. Close ties were established between the studies carried out at higher educational institutions on the one hand, and research and the practice of economic construction on the other. Practical work was included as an essential element of the curricula. Sharp lines of distintion between "pure" science and "applied" science, scientific and professional training, theoretical and practical training, were removed.

The official documents concerning higher education give a concise summary of the tasks to be accomplished by colleges and universities in the countries studied.

In 1968, a study of the development of higher education was published by the Romanian Ministry of Teaching and Education. Its introduction formulated the objectives of the modernisation of higher education as follows:

"The modernisation of higher education is an objective demand that follows from the development of our socialist national economy, science and culture. The fundamental goal of this is the technical achievement of the most advanced standards in every field. The complex process of full swing socialist construction needs highly qualified specialists to meet the requirements of the ever accelerating introduction of the results of the most up-to-date technical achievements, the increased complexity of economic activities, the rise in the cultural standards of our people as a whole and the enrichment of their spiritual life"(12).

Paragraph 1 of Article 1 of Poland's Higher Education Act of 1968 states 13), that:

"In Poland, institutions of higher education shall take an active part in socialist construction:

- by training and education professional intelligentsia capable of

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(12) L'Enseignement dans la République socialiste de Roumanie. Ed. par le Ministre de l'Enseignement, Bucaresti, 1973, p.76

(13) Januszkiewiez, F. "Education in Poland". Interpress Publishers, Warsaw, 1973.

taking an active part in the development of the national economy and culture;

- by training and educating new scientific "cadres", capable of guaranteeing lasting progress of sciences in Poland, and establishing relations between scinces and social and economic practice;

- they shall carry on research closely related to the demands arising from daily living and the prospects of the country's development;

- They shall foster national culture, promote technical advancement and propagate the achievements of sciences, thereby helping in the application of these desired results in the economy."

Institutions of higher education of this country which are primarily concerned with the training of specialists in all the branches of learning required in a modern society, group also the largest numbers of research staff (some 70% of the total) and provide facilities for both theoretical and applied research. In 1968, the traditional university structure was altered by abolishing the chairs and replacing them by institutes. These are larger organizational units, grouping specialists in allied sciences with their own didactic and research programmes. The new system was introduced in order to make more efficient use of facilities and technical equipment, and to concentrate research on specific problems.

Decree No. 25/6/1969 issued by the Hungarian Government (14) defined the tasks ahead of the universities as follows:

"Universities and colleges of a university status are the top level higher educational institutions in the educational system of the People's Republic of Hungary. Their duty is to provide, in line with the government's policy of higher education and in compliance with Act No.III of 1961, and the provisions included in other regulations of the law, the training of specialists; post-graduate training in research and to guarantee new manpower with scientific qualifications. In addition, by disseminating sciences as part of the cultural education of society and accomplishing other related tasks, they contribute to the utilisation of scientific achievements and in satisfying the needs of society."

The resolution adopted by the State Council of the German Democratic republic on 13 April 1969 (15), underlines the important part played by sciences and training in the establishment of the socialist society:

"The Constitution of the German Democratic Republic states that sciences and research, as well as the application of their discoveries constitute one of the essential foundations of the socialist society. Every field of the socialist society is being increasingly influenced by sciences and training. Ever closer relations are being established, especially between socialist large-scale industry and agriculture on the one hand, and research, training and post-graduate training on the other.

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14) Higher Education in Hungary (L'enseignement supérieur en Hongrie). Comp. by T. Klement, Budapest, 1973, p.86
15) Higher Education in the German Democratic Republic, Berlin 1973, p.50

Research and educational activities carried on by universities and colleges are increasingly combined with the formation of the advanced social system of socialism, with the shaping of the economic system in particular, with the accomplishment of the revolution in sciences and technology and with the development of the spiritual and cultural life of the socialist community."

Article 41 of the Fundamentals of Legislation of the USSR and Union Republics on Public Education of 1973 states that:

"The main tasks of higher educational institutions are:

- preparation of highly qualified specialists who have mastered Marxist-Leninist theory, a sound theoretical knowledge, and practical skills in a speciality and in organisation of mass-political education.

- educating the students in high moral qualities, communist consciousness, culture, socialist internationalism, soviet patriotism and readiness to defend the socialist homeland;

- constant perfection of the quality of preparation of specialists, taking into account the demands of modern production, science, technology, culture, and the prospects for their development;

- performing scientific-research work, which promotes a rise in the quality of preparation of specialists and scientific-technical progress;

- creation of textbooks and instructional aids;

- preparation of scientific-pedagogical personnel;

- raising the qualifications of the teaching staff of higher and secondary specialised educational institutions, and also of specialists with higher education, engaged in the corresponding branches of the national economy."

The official documents quoted above illustrate the profound interest expressed by the top state authorities in these countries, regarding questions of higher education. The great importance placed on institutions of higher education is also expressed by the fact that the planning of education and the direction of educational policy is in the hands of the highest state authorities, and is regulated by various laws in the respective countries. Higher education in general comes under the authority of the Ministry of Education/Culture and a separate Ministry of Higher Education and Vocational Training. Besides this, the sectoral institutions are supervised by the competent branch ministries.

These high state establishments work in collaboration with the principal directives of educational policy and the general directives for development. In this activity, they rely on opinions and advice of expert committees (council of higher education) of varying character. A large role is played in the establishment of educational policy by the leading political parties of these countries and their competent establishments. Leaders of universities and colleges (rectors and principals) meet from time to time with representatives of leading political organs and ministries at special joint conferences, in order to summarise the experience gained in higher education in a given period of time, and to elaborate the main directives for further development.

In the activities performed by institutions of higher education, training, education and research are inseparable from one another. The demand for creative and independent research must be met, above all, by universities and their staff. Institutions below university level, where applied and methodological research tends to be prominent, must satisfy lower requirements.

In the years following World War II, the part played by higher educational institutes in research was of less importance at that time, as their activities were concentrated almost exclusively on educational and teaching work. The factors responsible for research losing ground provisionally, include the rapid increase in the number of educational and organisational tasks to be accomplished, and the idea that research was to be performed primarily by the Academies of Sciences and the respective research institutes.

Prevailing conditions also favoured this view since the research institutes had more favourable material conditions at their disposal, while even the essential facilities for research were not made available to the universities. The progress of the scientific and technological revolution, and the new demands accompanying it, left no doubt about what was always beyond doubt: higher education is inseparable from research.

Professor Szzepansky of Poland states the following in one of his studies:

"The inherent nature of things foiled this kind of development (ie. to confine university activities to accomplishing educational tasks only.) Firstly, the educator failing to do research could not become even an associate professor. Secondly, a person not engaged in research would not be regarded as a valuable teacher, either by his students or colleagues. Thirdly, economic development needs graduates of a standard that can only be achieved if they are trained by people who perform creative research themselves." (16)

Thus the reason for the extremely diverse nature of research now conducted at universities and colleges.

In the leading institutions, emphasis is laid primarily on the development of basic research, while applied and methodilogical research tends to be the main tendency pursued by the smaller and more specialised institutes concerned with natural and applied sciences. In the case of both kinds of institutions, it is desirable for research to correspond to, and above all to satisfy, the concrete demands arising from practice.

It is noted the three fundamental forms of organising the educational-scientific process have reached the most significant stage of development in the countries concerned. (17) (18)

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16) Szzepansky, J: Qualitative Wandlungen im Hochschulwesen (Warsaw 1970)
17) Graduate employment and planning of higher education in Poland by B. Sanyal and A. Yozefowicz, Int. Inst. for Educational Planning, Paris 1978
18) Higher Education in the USSR, by Soviet Minister, N. Obraztsov, to be published by Unesco.

The first form implies the organisation and broad development of research within an Institute.

The second form is founded on use of the bases of research, such as institutes, design offices and industrial institution in different fields. This form permits a successful combination of fundamental general education and specialised training at these bases.

The third form is characterised by a close connection between institutes and industrial enterprises, based on joint agreements about the use of laboratories and production bases. These permit students to reach higher levels and enable them to solve specific problems related to their future activity.

Co-operation between institutions of higher education, research institutes and plants, can take various forms. The enterprises and plants contribute to the development of institute laboratories and supply them with the most modern instruments by making funds available, or acting as organisers. It is customary for institutions of higher education to invite specialists from outside either to be in charge of the practical work, as advisors working in special programmes, or to direct and assist the students in completing their diploma work.

Particular attention is being paid to questions relating to university education, which should occupy a leading position in these countries and be instrumental in improving the scientific level of training for all professions. The plans provide for a powerful drive to increase the basic material and technical facilities available to the universities, and develop them as quickly as possible into major scientific-educational centres, capable of assisting more and more in the development of other higher educational establishments (19).

II TRENDS IN EDUCATIONAL DEVELOPMENT

When discussing the trends in education, it should be noted that such terms as "new forms of education", "traditional and non-traditional forms of education", have their own particular meaning in each country in each level of development of a given educational system.

1 Evening and correspondence courses

The setting up of evening and correspondence courses for the adult working population was the first organisational form of the people's democracy, even in its early history, which enables gifted manual labourers to go to college or university. That is why the system of evening and correspondence courses in adult education was built up in the socialist countries well before the same introduction in the West European states.

In 1977 there were in the USSR 16 big special institutions for correspondance sections in the establishments of higher education. The number of students of this type of education was about 1 million, 600 thousand. There were also 650 thousand students of higher education visiting evening courses of higher education establishments (20).

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(19) Planning the development of universities, I,IV, by Onnshkin, V.G, Kondrattev,K.Y, Zubkov,V. Paris, Unesco Press, IIEP 1971 and 1975
(20) L'URSS aujourd'hui et demain, Instruction. 1979, p.40

During the last few years, qualitative changes have taken place in the origin of evening and correspondence students. Previously, the great majority were people who were finishing their studies in general education schools, whereas now there are a great number of students graduating from vocational technical schools and considerable numbers of students from specialised secondary education establishments. There was a marked increase in this trend up until the mid '60s, but it has since declined (with the exception of Romania) (21)

This type of education has now lost its role in compensating people for social injustice, but it continues to form an organic component of the higher educational system. Its duty is partly to enable the masses to exercise their right to education, thus providing mobility between the social classes. On the other hand, it plays a very important role in satisfying the national economy's varying demand for specialists, in performing career correction and in implementing permanent education.

In this connection more effective educational and teaching forms and methods are sought by taking advantage of all the possibilities offered by today's technical devices. Thus, educational television plays an important role in the system of higher education. In the USSR, for example, at present more than 100 higher educational institutions are using external and internal television for educational purposes. There are over 8,000 hours per year of educational broadcasting on external television, and 15,000 hours on internal circuits (22).

At present it is noted that there is a tendency towards gradual transformation of the evening form of higher education into that of combining education with work at a plant, and the replacement of education by correspondence by the "day correspondence system" of education (23)

2 People's "universities"

An interesting new form of education should be mentioned here - People's Universities. Article 12 of "Legislative Fundamentals of Public Education of the USSR", for example, pertaining to self-education - states that the people's universities are organised "to assist self-education and to raise the cultural level of citizens."

It should be noted that the people's universities do not seek to provide training in accordance with any definite state standards and therefore should not be considered as qualifying for the obtainment of employment in a frofession, or for enrolment in a state school.

The major form of educational activity is lectures, but besides these, there are seminars, debates, informal discussions etc. Admission is not restricted and anyone wishing to attend lectures and other courses, may do so. After graduation from these universities (the majority of which run two, three and four year programmes), diplomas are awarded.

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(21) "New forms of higher education in Europe", CEPES, Bucarest 1976
(22) New forms of higher education in the USSR. Prof. V.N. Tchetverikov's report at the Symposium organised by European Centre for Higher Education. Bucharest 1976
(23) "Higher education in the USSR. Development problems and concepts" The article of the Soviet Minister, Ivan P. Obraztsov, to be published by Unesco.

In 1969, there were 9,600 universities with a total enrolment of 1.9 million students. In 1976, the number of universities had grown to 34,000 with an enrolment of more than 8 million students (24).

This system allows people who have mastered basic material to pass gradually on to a higher level. This is the guiding principle for the development of the people's universities, their role being to provide continuing education for the adult in all stages of his life.

There are also other forms of adult education which vary from one country to another. In the German Democratic Republic, for example, in addition to correspondence courses and evening classes at universities, colleges and technical schools, there are numerous state and social educational institutions which encourage adult education: enterprise academies, village academies, scientific societies ("Urania" - an organization engaged in the propagation of new findings in society, nature and technology, "Chamber of Technology", "Society of Agricultural Sciences"), academies of industrial branches, institutes for the management of socialist economy, evening classes ("Volkshochschulen"), academies for advanced education, TV courses, parents' courses, women's courses etc (25).

3 Trends in Higher Education

3.1 Reform of content

At present, the traditional concept of curriculum is being revised by every socialist country. The need for revision has been brought about by social progress, the scientific and technological revolution, the exponential increase in the amount of new information and the necessity of permanent education - factors leading to organisational changes.

The first result of this revision is that inflexible curricula have been changed somewhat, making it possible for the universities and colleges to draw up their own training programmes, make changes in them periodically, bring them up to date and introduce new trends, specialisations and information required by the advancement of sciences into the training scheme in a comparatively short interval of time.

Because of the rapid development in sciences, university training cannot be expected to supply knowledge or lasting practical information, applicable during a whole life span. As a result of this being recognised, two distinct tendencies are already apparant in higher education. One is the aim to avoid specialisation of too narrow a scope. There are considerable cutbacks everywhere in the specialised fields at universities and colleges, which tend to regard professional education of a wider spectrum as their principal task during the ordinary duration of training. More intensive specialisation in both the theoretical and practical fields, is now transferred to post-graduate training following completion of undergraduate studies.

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(24) The development of adult education in the USSR, Darinsky A.V. Journal of Literary discussions, Spring 1976

(25) Development of Public Education in the German Democratic Republic, Berlin, 1979, p.34.

The other tendency that logically follows the first, is to increase the importance and proportions of what are termed as fundamental and basic courses, as against the whole content of training. Translated into practical terms, this means that in technical education, for example, the ratio of mathematics, physics, chemistry, electronics, as well as that of the general technical subjects, is increased in accordance with the specialisation concerned, while students of agriculture are taught physics, chemistry and biology more intensively.

The introduction of multi-stage training raises the issue at which stage basic and special subjects should be taught during the training process. It is beyond doubt that teaching in basic subjects cannot be restricted to the initial years of training and this view is justified on profession, scientific and didactical reasons. In the system of two-stage training, the teaching of basic and special subjects should be extended to cover the second stage as well, and at the same time, the curricula for the lower stages should include a larger amount of concrete and applied material.

It should be noted that it is extremely difficult to find out the proportions in which the fundamental, basic and professional subjects figure in the curricula adopted by the individual countries. What renders it impossible to give a uniform picture is the fact that education must satisfy different social requirements for different universities and because the objectives to be accomplished in training vary, depending on the teaching institutions at different levels. However, the tendency is that instead of preparing the students to work within the narrow limits of a special field, specialists must be trained to be able to cope with a fairly wide range of specialisations and be capable of developing their knowledge on their own.

3.2 Interdisciplinary approach

There is no doubt that up-to-date university training programmes, corresponding to the standards of scientific development, can only be drawn up provided that the system of inflexible education based on set subjects and prevailing even today is reformed. What may well be described as "subject structured training" is closely associated with the traditional set-up of the universities (made up of chairs and faculties separated from one another), and the system of sciences which are the products of historical development. It means that the subjects taught are, as a rule, identical with the corresponding disciplines, each of which is represented by a chair.

This traditional "subject structured" training loads the student with a considerable amount of surplus information that is absolutely unnecessary from the viewpoint of professional training, because the educators on the staff of the separate chairs all wish to convey the complete system of the disciplines they teach. In the absence of appropriate co-ordination, there is too much overlapping of the material imparted within the framework of individual subjects, which is a sheer waste of time. Education based on the system of separate subjects is an obstacle to the recognition of contacts between the different specialisations and logical correlations, hampering the development of the ability to think, finding the correlations between things, recognising problems and assuming an interdisciplinary attitude.

Intensive research and experiments are now in progress with the object of implementing integrated education. However, there are numerous objections voiced against this and they are well worth considering. The fact that interdisciplinary research has come into prominence does not necessarily call for the elimination of the relative independence of subjects corresponding to respective disciplines and their own structure. That is why the competent authorities do not press for the immediate introduction of integrated education; instead, they support experiments designed to reveal the extent to which the forms in which integrated education can work in practice.

In spite of the fact that a system built up along these lines involves in principle a number of advantages, it is not so easy to put into practice. The difficulty of implementing it quite often lies in the staff being too insistent on the traditional educational structure (26).

3.3 Alternative and facultative subjects

University education, based upon the students' creative activities and the method of learning while doing research, necessarily places growing emphasis on meeting the student's individual interests and developing their special abilities.

That is why in training, an increasing role is played by alternative and facultative subjects in the higher grades in particular, while the obligatory ones continue to serve as the firm scientific and theoretical foundations of the training of specialists.

The general opinion is, that in accordance with the specialisation of staff, and following scientific and theoretical basic training, students must be able to choose from as many subjects as possible, covering a diversity of fields, taking some of them as alternative and facultative ones matching their particular interests. Thus the reason for a considerable proportion of the training time in the higher grades, being made available for the study of alternative and facultative subjects (27).

But, on the other hand, educationalists (28) feel that a wider spectrum of knowledge should be made available to students, as they have to deal not only with their own narrowly specialised fields but also with those adjacent in science and technology.

It is supposed that the training of specialists should comprise several facets: firstly, a theoretical part, the basic essentials of which are acquired in the higher educational establishments; secondly, a trainee period after graduation involving work that is fully related to the previous instruction; thirdly, regular further training at least once every five years, taking the form of refresher, retraining or advanced training courses.

In each of these three components making up the specialists's initial training and further scientific development, it is necessary to improve existing training methods.

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(26) Interdisciplinarity in school education in the USSR, by Zvezev, Ivan, Prospects, Vol.5, No.4, 1975.
(27) New forms of higher education in Europe, Unesco, CEPES, Bucarest, 1976
(28) Grant, Nigel. Teacher training in the USSR and Eastern Europe. Comparative Education, Vol 8, No.1, April 1972, P.7-29

4 Conclusion

The East European socialist countries have obtained great successes in the education of youth and preparation of qualified workers and specialists in all branches of the national economy and culture. Nevertheless, in recent years the countries under examination have felt a growing need to reform their education systems as they have hitherto existed in their traditional form.

This need for reform appears to be prompted, in the majority of cases, by a combination of economic, social and demographic considerations. Indeed, the change to mass education, industrial development, scientific and technical progress, and the increasing demand for personnel at the professional and sub-professional levels, and for life-long education, has profoundly altered what were until recently, the operating conditions of education and the tasks which evolved from them.

The basic task confronting the educational systems of countries studied, is to improve the quality of the training and education of specialists, taking into account the current economical, social and cultural requirements of society, as well as the forecast for their development.

With those targets in view, the most characteristic features of the educational development can be summarized as follows:

Firstly - the link between education and life, combining education with different kinds of work and rapidly growing numbers of graduates from secondary vocational and specialised schools.

It is noted that special attention will be paid to the training of specialists with secondary specialised education so as to reach optimal correlation - five or six specialists with secondary specialised education engaged in national economy for every specialist with higher education.

Secondly - in the tendency to search for new educational forms and contents, an important part is played by institutions of higher education in developing research and improving the scientific level of graduate training.

Most socialist countries have plans which provide for a powerful drive to increase the basic scientific material and technical facilities available to the higher educational establishments.

Thirdly - the development of the democratization of education - equality in the obtainment of higher education for young people of different social backgrounds as well as democratization in the administration of educational establishments.

In this connection, it is noted that assistance to gifted young people with disadvantageous social backgrounds will continue to play an important part in the educational policy of socialist countries. However, remarkable differences in young people's spiritual development, standards of learning and ambition to obtain higher education will also continue to exist.

All these measures are expected to upgrade the level of general education and contribute further to the scientific and technical preparation of high-level workers and specialists, and it is inconceivable that the great tasks facing the countries concerned can be achieved in time.

III SOME ASPECTS OF EDUCATIONAL FORECASTING AND PROSPECTIVE PLANNING

Sixty years ago the term national economic planning could not be found in any encyclopaedia. Many languages had a word for plan, but it was never applied to the dimensions of the whole economy or its major sectors.

As a result of the socialist revolution in Russia in 1917 the objective basis for planning the economy at the national level was laid in the socialist society and it became possible to replace the contradictory forecasts of an unstable economy with a single national economic plan.

Full employment, the elimination of income disparity, the rapid rise of the educational level - common features in the socialist society. The role that the system of educational forecasting and planning plays in the implementation of these principles, its connection with economic development plans in the socialist countries deserves analysis.

In the socialist countries, the system of educational forecasting and planning is becoming a scientific and teaching discipline about which many scientific papers and numerous advanced textbooks have been published. The systems approach and economic-mathematical methods make it possible to give a detailed substantiation of any decisions which are being made, since a great variety of relationships and variables can be taken into account and many different variants of resource allocation can be evaluated.

1 General tasks of economic forecasting and optimal prospective planning

1.1 The system of economic forecasting and planning

Under socialism prospective plans have priority over forecasts although that does not make the latter any less important. In particular, planning methods use a wide range of forecasting data as raw materials, primarily in the field of demography, the future development of science and technology, in the field of education. For the socialist countries, the combination of current work and current planning with the task of defining the most important trends and prospects for development over a long period has been one of the most important principles confirmed in practice. In this connection the principle of the succession of planning tasks over dirrerent time periods should also be noted.

Short-term, medium-term and prospective plans form an unbroken chain, each link of which has its own, well-defined role to play. Undermentioned Fig. 1 represents the succession and interrelationship of drawing up sliding long-term forecasts, perspective, medium and short plans.

Fig. 1 General diagram of optimal prospective planning and economic forecasting.

Long-term forecast for a period after 1994	Perspective plan for 1980-1994	Medium-term plan for 1980-1984	Short-term plan for 1980
Long-term forecast for a period after 1995	Perspective plan for 1981-1995	Medium-term plan for 1981-1985	Short-term plan for 1980

Optimal prospective planning models are usually computed for a period of about 10-15 years and make it possible in principle to resolve the following general tasks:

- A steady rise in the general standard of welfare of the working people on the basis of the optimal allocation of existing resources among all parts of the economy and their optimal utilisation in each of these parts.

- Selection of the most effective trends in scientific and technological progress and establishment of the most favorable economic conditions for the timely and smooth introduction of scientific and technological innovations into the economy.

Obviously, however, different variants of this same system can be prepared. The effectiveness should be tested by theoretical analysis, and the experience and practice of managing an economy. In every country economic development is inseparable from the other aspects of its social existence. In the socialist society the uniformity and interaction of economic and socio-political factors and aims are reflected in the strategy of economic development.

The term "strategy" usually means the art of conducting large-scale military operations, the definition in principle of the main tasks of development etc. In the economic field strategy cannot be restricted simply to determination of the main line of development, but must also foresee the ways and means needed to put it into effect. In other words the strategy of economic development is an aggregation of final aims and the means of implementing them. The aims adopted in the socialist society make it possible to carry through an optimisation approach to running the economy and to satisfy the needs of all social groups to the maximum possible extent. In order that the aims of economic development may be scientifically based, a definite scientific concept must underpin the strategy that has been selected.

Economic policy is the form taken by the particular strategy in practice. In order to work out a theoretically sound strategy of economic development it is important both in theory and in practice to ascertain the basic trends of development of the socialist economic system. In other words it is necessary to draw up a forecast of the process of reproduction for the future.

Forecasting models should describe the structure of the country's development, the relationship between the rates of growth and proportions in the economy and its ties with foreign markets in the long term.

The main task of economic forecasting is to ascertain the possible future effect of taking economic decisions in the present.

It is also necessary to take into account the fact that forecasting is assigned only to foresee the possible effect of economic measures but not to evaluate this effect according to its desirability. Forecasting determines the "set" of possible variants of development in the future but in no way resolves the problem regarding the goal-directed choice of the best of these possible variants. The forecast variant of future development is considered admissible if it agrees logically with the system of initial premises underlying the qualitative description of the process as a whole.

According to these explanations the general scheme for drawing up a plan for the national economy has the following form;

1. Evaluation of socio-economic conditions in the country, estimation of resources, analysis of the state of the economy at the beginning of the planning period and the trends of economic development emerging in the preceding period.

2. Forecasting of the main trends of development and the level of social needs and resources in the long term, a forecast of scientific and technological progress.

3. Determination of the aims and tasks of economic development in the particular planning period, their co-ordination with long-term development aims, determination of the main trends of development of the economy and of economic policy methods.

4. Determination of the rates and proportions of development, projections of final demand.

5. Determination of the basic planning indices (drafting of the general outlines of the plan).

6. Compilation of a large-scale plan and the concrete formulation of planning tasks for individual economic units.

According to the main tasks of this paper it should be noted that the problem of prospective planning and long-term forecast for development of population and manpower resources and its qualification and educational level is very important for drawing up a plan for the national economy because of educational influence on the economic development.

1.2 The relation between education and economic development

Education has a many-sided influence on economic development. It is mainly reflected in production growth. A worker with a higher level of education and culture can specialize his qualifications more quickly, uses stock and raw materials better etc.

It is difficult to measure the economic effects of educational development but it is possible to do it indirectly, for instance in terms of increased productivity.

The growth of national revenue depends on two factors:

- Increase in the number of productive workers

- Increase in labour productivity

The increase in labor productivity depends on three factors:

- Improvement of technical equipment

- Raising the educational and qualifications level of workers

- Improving work organization

Educational returns essentially consist in the increase in national revenue resulting from improved worker's qualifications.

In order to evaluate the efficiency of education, education expenditure should be compared with the resulting increase in national revenue.

The relation between educational expenditure and the increase of national revenue represents the coefficient of general educational effectiveness.

The inverse relation represents the coefficient of general national revenue growth, resulting from education.

If we let X represent the first coefficient, Y the second, Z expenditure and N national revenue, we obtain

$$X = \frac{Z}{N} \quad \text{and} \quad Y = \frac{N}{Z}$$

These indices of general effectiveness show the effects of overall educational expenditure, but it must not be forgotten that it is extremely difficult to exactly calculate the extent of education's influence on the national revenue and it can be done indirectly through the raising of workers' qualifications.

Thus educational expenditure is socially productive and can be compared to investment. Within the framework of the national economy, it is necessary to give the greatest attention to long-term investments, as to those which represent the strengthening of productive factors, education and science. That is why the problem of educational planning and forecasting is very important to estimate these investments.

2 System of prospective planning and forecasting for education

2.1 General tasks of educational planning forecasting

The economic development and education of the working people is, under socialism, one of the main objectives of social development. Thus, long-term forecasting and prospective planning of the educational and qualification level of the working people will be of greater importance in optimal prospective planning and long-term economic forecasting in the socialist society.

Educational forecasting has to estimate the development of educational requirements, of levels of qualification, and of levels of education and also has to show the resulting qualitative and structural requirements to be met by the socialist education system as well as its capacities. With the aid of educational forecasting, several variants for meeting the educational requirements of the socialist society will have to be indicated and their contribution to the development of the personality and to economic efficiency will have to be examined. Thus, educational forecasting must, above all, seek to discover new policies for the improvements of the educational system itself, its main task being to furnish in advance a maximum of information to be utilized in prospective planning.

Prospective educational planning aims at selecting from the possible forecasted variants that which will indicate the most efficient method of achieving the objectives.

Medium term and short-term educational plans must ensure that the objectives and rates of progress of educational policies established in prospective educational plans will be achieved by the efficient employment of available resources during the appropriate space of time.

The tasks of educational planning are:

1. Determination of the long-term educational requirements of members of the society concerned, and of these components which will meet the manpower and professional requirements at the level of the country's socio-economic and scientific-technological development.

2. From there the supply of trained personnel must be related to appropriate fields of competence according to the level of education (professionals trained at universities or upper technical schools; skilled workers etc.) and to employment possibilities for professional manpower.

3. The actual structure of education, the level profile and duration of training at all stages must be determined on the basis of established educational requirements and required supply of graduates from various educational establishments; in so doing, the efficiency and balance between the various educational channels has to be established (e.g. classrooms instruction, extramural studies and formal education combined with simultaneous professional training).

4. Since technical knowledge and qualifications will become obsolete as the result of economic, scientific and technological progress, the requirements for subsequent retraining of the professional cadre have to be decided upon, both in terms of scope and timing.

5. A major problem of prospective planning of education and manpower supply, is that of finding the conditions under which acquired levels of skills will be fully utilized in the processes of economic production; also to ensure the employment of the trained labour force in the most efficient way and to create a climate of intensive training and education within the worker's environment itself.

A characteristic feature of educational planning is its strategic nature, as the fundamental impact of educational planning often only becomes fully effective ten or twenty years later. That is why the successful functioning of the educational system is highly dependent on the quality of previous long-term forecasting and perspective planning.

2.2 Some models of educational planning and forecasting

The fundamental problem of prospective educational planning is to determine the efficient quantitative and qualitative ratios between education and economic development. In other words educational planning has to reflect correctly the required rate of growth of the labour force in terms of the various groups of skill and professional qualifications.

It is necessary to note that this task cannot be solved by simply aggregating the labour demands estimated by individual institutions which have to be included in the estimates of the basic components of manpower demand to be expected from economic growth as a whole. It is possible to describe these components of manpower demand in this manner:

- that which results from the growth of the worker's educational needs and from their improved working and living conditions;

- that which results from the increase of material production and the creation of the material preconditions for meeting the material and intellectual wants of the working people;

- the specific demand resulting from the growth of science and technology;

- the demand for professionals required for public administration and economic management;

- the demand for trained professional manpower required by education itself to enable it to meet the manpower demands in the four preceeding categories.

These components of the demand for trained manpower form the basis of the model for prospective planning adopted in one of the socialist countries - in the German Democratic Republic.

Undermentioned Fig. 2 represents the functioning of the perspective planning model for determination of labour demand.

This Figure represents two stages in utilizing this model. First of all, the total numbers of workers needed in each category to achieve the tasks imposed on them are estimated in purely quantitative terms. At the second stage, the total manpower requirements of the nation are calculated and are set against the available manpower resources (the manpower balance).

At the third stage, there is a separate estimation of the future labour structure by types and levels of qualification.

On the basis of the total demand of the socialist society for trained manpower, balanced against the labour supply, and of the quantity of labour available, the demands of the various groups of skills for repacements and additional labour can be calculated. From this it is possible to derive the initial information necessary to estimate the requirements for the development of education.

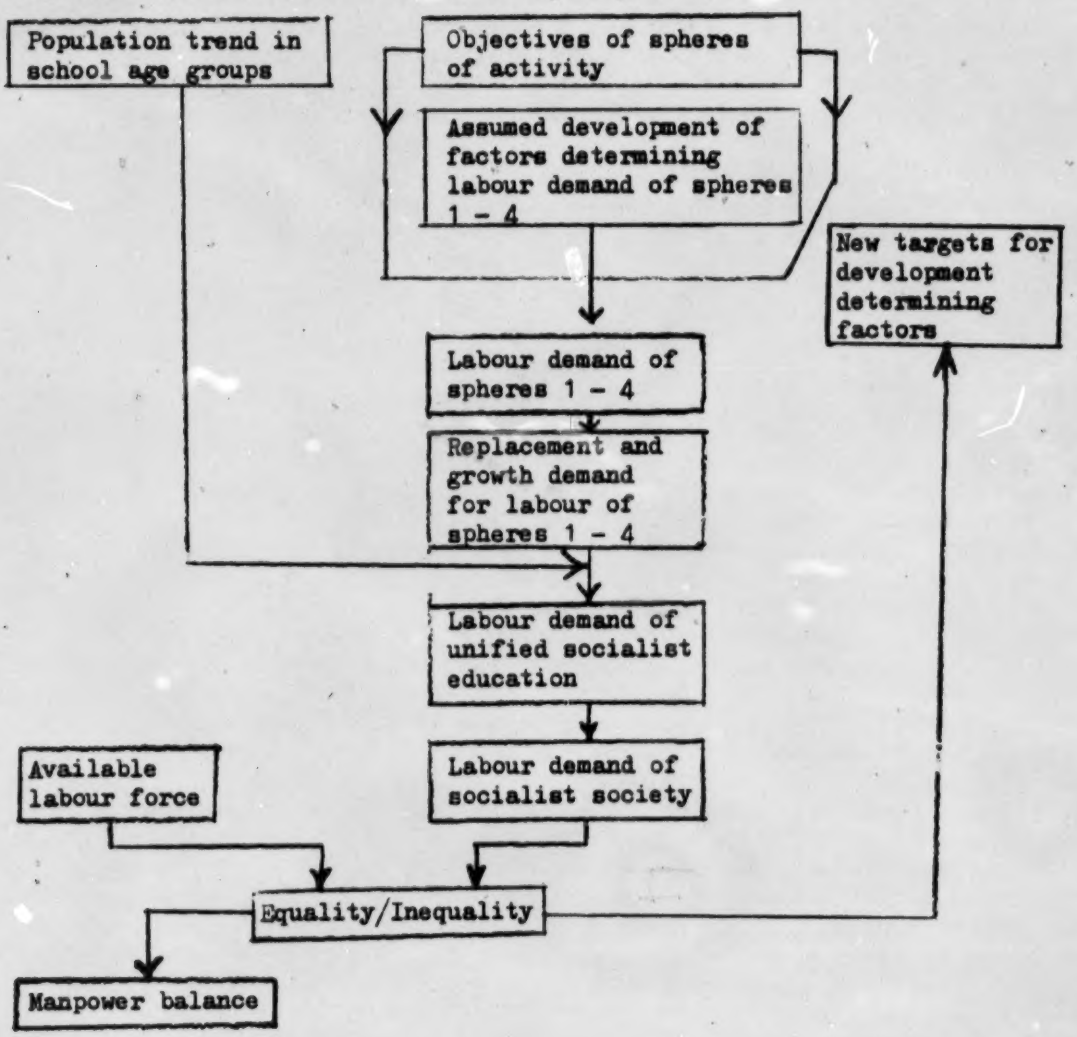
Population trend in school age groups
Objectives of spheres of activity
Assumed development of factors determining labour demand of spheres 1 - 4
New targets for development determining factors
Labour demand of spheres 1 - 4
Replacement and growth demand for labour of spheres 1 - 4
Labour demand of unified socialist education
Available labour force
Labour demand of socialist society
Equality/Inequality
Manpower balance

Fig. 2 The manpower balance

2.3 Estimating the needs of qualified manpower

There are other methods of determination of the number of persons engaged in different branches of the national economy. In general, estimates of the probable number of persons who will be engaged in the national economy are based on the plans for development. Among the factors considered are the increase in the gross industrial and agricultural output; the rise in the volume of transport; the increase in capital investment; the growth in labour productivity etc. The number of productive workers employed in industry, as well in other branches, fluctuates in direct proportion to the gross output and inverse proportion to labour productivity.

The interrelationship between the average annual number of industrial personnel in a planning year and in a base year may be expressed by the following formula:

$$Lp = Lb \frac{Co1 \cdot Co2 \ldots Con}{Cw1 \cdot Cw2 \ldots Cwn}$$

where
Lp: Number of workers and employees in the year concerned
Lb: Number of workers and employees in the base year
Co: Coefficient of increase in gross output for each year covered by the plan
Cw: Coefficient of the growth of labour productivity in terms of output per worker in each year covered by the plan
n : Number of years covered by the plan
Estimates of the number of persons in agriculture, construction, transport and communications are made in exactly the same way.

The service industries present their own specific problems. For example, a service such as education comprises

- educational establishments for the training of skilled workers;
- general educational schools;
- pre-school institutions, homes for children;
- cultural and educational establishments etc.

Determining the number of workers and employees in each of the above groups also has its specific features although, with the partial exception of the first group, the calculations for each of them are based on the expected size of the population in the corresponding age groups.

After estimating the number of people expected to be employed in each branch of the national economy and culture, it is essential to analyze the returns to see that they tally with facts regarding the labour resources. The estimated number of workers and employees in each planning year must correspond to the labour resources available. To this end, several variants of the labour resources balance are calculated and this makes it possible to ensure the most rational allocation and utilization of labour resources so as to secure the maximum output with the minimum outlay of labour.

Additional requirements in workers are calculated on anticipated growth and replacements. The growth equals the difference between the number of workers in the planning period and their number in the previous year. For example for workers, classified by skills, assuming the existence of servicing norms fixed for vocational groups, the number of workers by vocations will be computed by the following formula:

$$Wp = Ep.Np.Cs$$

where:

Wp : Planned number of workers in a given skill

Ep : Planned number of units of the relevant type of equipment (machinery)

Np : Planned servicing norm (per unit of equipment)

Cs : Coefficient of shift work applying to equipment (machinery) in the planning period.

This formula is also used for determining the number of workers in the case of new skills resulting from the introduction of new technology. Further, the servicing norm for new equipment may be obtained either on the basis of the technical design data or of information material supplied by enterprises which already employ this technology.

If servicing norms for a particular skill are lacking, then the number of workers can be computed by the following formula:

$$Wp = \frac{Wa.Ie}{Io} \cdot Ic$$

where:

Wp : Planned number of workers in a given skill

Wa : Actual number of workers using it

Ie : Index of change in the amount of stock of a particular type of equipment required to execute the amount of production planned

Ic : Index of change in the coefficient of shift work ap lying to machinery in planning period

Io : Index of change in the output of workers in given skill in the planning period.

The estimate of additional requirements for skilled agricultural workers is made on the basis of data on the size and make up of the tractor resources, the servicing norms for the most important types of machinery and the shift-work coefficient of equipment. In such branches of the national economy as trade, food, housing and communal services, the number of workers in various skills is determined on the basis establishment schedules or the regulations governing the number of servicing staff.

Additional requirements in specialists i.e. the number of specialists who will have to be graduated during the planning period, will be determined on the basis of the number available in the base year and the total required in the planning year.

It is possible to calculate these requirements using the next formula:

$$Sb + 1 = Sb\ (1-Cd1) + Sg1$$

$$Sb + 2 = Sb + 1\ (1 - Cd2) + Sg2, \text{ etc.}$$

Where :

Sb : Number of specialists at the end of the base year

Sb + 1, Sb + 2, etc. : Number of specialists at the end of any given year in the planning period

Cd : Coefficient of the drop-out of specialists

Sg1, Sg 2 etc.: Number of specialists graduated in each year.

For subsequent years the availability of specialists may be determined by the following formula:

$Sp = Sb \cdot CI_1 \cdot CI_2 \ldots$ Cin. Where

Sp : Number of specialists at the end of the planning year

Sb : Number of specialists in the base year

C1 : Coefficient of the increase in the number of specialists in each year

n : Number of years in the planning period.

The calculations of the need of specialists according to the saturation of specialists in branches of the national economy, which are based on forecasts of the proportions of development of these branches and on generalized technical economic estimates, cannot claim to be as precise as estimates of the need according to specializations. However, they are based on demographic data and the objective laws of the planned development of the socialist society and give the possibility of defining with sufficient accuracy the need in specialists in larger groups of specializations.

3. Conclusion

With state ownership over the means of production the satisfaction of the nation's material and cultural needs and intellectual development of the individual constitute the content and purpose of the plan-directed economy.

A solution of this general task involves both the quantitative and qualitative replacement of the manpower resources in terms of number, composition by age, sex and qualification and also their efficient use. Theat means that the objectives and policies for national economic development must be set after taking account of the needs and problems concerning the use of the manpower resources and their training. That is why the problem of educational forecasting and planning is very important to draw up the optimal perspective plan for economic development of the socialist society.

The widespread use and practical testing of various new methods in mathematics, systems analysis and computer software have made it possible to formulate the general aims and concrete tasks confronting present day educational planning.